PCA Since 1916
America's Cement Manufacturers™

Design and Control of Concrete Mixtures

February 14-17, 2022

Monday, February 14

8:00	***WELCOME***	Michelle Wilson ***PCA***
8:30	FUNDAMENTALS OF CONCRETE • Materials Selection • Fresh & Hardened Concrete Properties	Michelle Wilson
9:00	CEMENTITIOUS MATERIALS • Portland Cement • SCMs	Michelle Wilson
10:30	***BREAK***	
10:45	AGGREGATES • ASTM C33 • Characteristics of Aggregates • Grading	George Seegebrecht ***CCE***
12:00	***LUNCH***	
1:00	CHEMICAL ADMIXTURES • Air Entrainment • Water Reducers & Super-plasticizers • Set Modifying Admixture • Specialty Admixtures	Colin Lobo ***NRMCA***
2:00	SKIN SAFETY W/ CEMENT & CONCRETE • Safety Video	
2:30	***BREAK***	
2:45	***LABORATORY EXERCISE*** • Use of Chemical Admixtures • Use of SCMs • Use of Fibers	
4:30	***EVALUATION & ADJOURN***	

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Tuesday, February 15

8:00	BATCHING, MIXING, & TRANSPORTING & HANDLING CONCRETE • Checklist for Concrete Placement • Delivery Considerations • Placing Equipment • Vibration & Consolidation	Colin Lobo
8:45	HOT & COLD WEATHER CONCRETING • Effects of High Concrete Temperatures • Cooling Concrete Materials • Effect of Freezing on Fresh Concrete, Maturity Method • Strength Gain of Low Temperature Concrete	Michelle Wilson
10:00	**BREAK**	
10:15	PLACING AND FINISHING CONCRETE • Finishing Methods • Jointing Procedures	George Seegebrecht
12:00	***LUNCH***	
1:00	CURING • Methods & Materials • Period & Temperature	George Seegebrecht
2:00	VOLUME CHANGES OF CONCRETE • Early Age Volume Changes • Moisture Changes (Drying Shrinkage) • Thermal Changes • Curling (Warping) • Elastic and Inelastic Deformation • Chemical Changes and Effects	Michelle Wilson
2:45	***BREAK***	
3:00	CONTROL TESTS FOR CONCRETE • Demonstration- Fresh Concrete Tests- -Slump, Air, Unit Weight, Temperature	
4:30	***EVALUATION & ADJOURN***	

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Wednesday, February 16

8:00	HIGH-PERFORMANCE CONCRETE •Reinforced Concrete • High-Early • High-Strength • High-Durability	Colin Lobo
10:00	***BREAK***	
10:15	DESIGNING CONCRETE MIXTURES • Factors to Be Considered • Selecting Mix Characteristics	Michelle Wilson
12:00	***LUNCH***	
1:00	PROPORTIONING CONCRETE MIXTURES • Absolute Volume Procedure • Group Projects	
2:45	BREAK	
3:00	PROPORTIONING CONCRETE MIXTURES (Cont.) • Laboratory	
4:30	***EVALUATION & ADJOURN***	

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Thursday, February 17

8:00	INNOVATIONS IN CONCRETE TECHNOLOGY • Translucent Concrete • Photocatalytic (Self-Cleaning) • Engineered Cementitious Composites (Bendable Concrete) • Self-Healing Concrete • Additive Manufacturing (3D Printing) • Geosynthetic Composites • Robotics • Drones • Artificial Intelligence (AI) • Virtual Cement Hydration • Nanotechnology • Lunar Concrete	Michelle Wilson
10:00	***BREAK***	
10:15	BREAK-OUT SESSION • What Have We Learned??	Review Panel
11:15	CLOSING REMARKS	
11:30	***EVALUATION & ADJOURN***	